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(54) Title: MUTANT SODIUM CHANNEL Na_v1.7 AND METHODS RELATED THERETO

(57) **Abstract:** Described are mutant Na_v1.7 sodium channel alpha-subunits and nucleic acid sequences encoding such mutants. Further described are methods for characterizing a nucleic acid sequence that encodes a Na_v1 sodium channel alpha-subunit, methods for determining a Na_v1.7 haplotype, methods for determining a subject's predisposition to a neurologic disorder associated with a sodium channel mutation, and methods of identifying a compound that modulates mutant Na_v1.7 sodium channels. Other materials, compositions, articles, devices, and methods relating to mutant Na_v1.7 sodium channels are also described herein.

SEQUENCE LISTING

<110> Leppert, Mark F.
Singh, Nanda A.

<120> Mutant Sodium Channel Nav1.7 and Methods
Related Thereto

<130> 21101.0048U2

<150> PCT/US05/02059

<151> 2005-01-21

<150> 60/538,149

<151> 2004-01-21

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<223> Description of Artificial Sequence:/note =
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Thr Phe Lys Gly Trp Thr Ile Ile Met Tyr Ala Ala Val Asp Ser Val					
	1395		1400		1405
Asn Val Asp Lys Gln Pro Lys Tyr Glu Tyr Ser Leu Tyr Met Tyr Ile					
	1410		1415		1420
Tyr Phe Val Val Phe Ile Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu					
1425		1430		1435	1440
Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln Gln Lys Lys Lys Leu					
	1445		1450		1455
Gly Gly Gln Asp Ile Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn					
	1460		1465		1470
Ala Met Lys Lys Leu Gly Ser Lys Lys Pro Gln Lys Pro Ile Pro Arg					
	1475		1480		1485
Pro Gly Asn Lys Ile Gln Gly Cys Ile Phe Asp Leu Val Thr Asn Gln					
	1490		1495		1500
Ala Phe Asp Ile Ser Ile Met Val Leu Ile Cys Leu Asn Met Val Thr					
1505		1510		1515	1520
Met Met Val Glu Lys Glu Gly Gln Ser Gln His Met Thr Glu Val Leu					
	1525		1530		1535
Tyr Trp Ile Asn Val Val Phe Ile Ile Leu Phe Thr Gly Glu Cys Val					
	1540		1545		1550
Leu Lys Leu Ile Ser Leu Arg His Tyr Tyr Phe Thr Val Gly Trp Asn					
	1555		1560		1565
Ile Phe Asp Phe Val Val Val Ile Ile Ser Ile Val Gly Met Phe Leu					
	1570		1575		1580
Ala Asp Leu Ile Glu Thr Tyr Phe Val Ser Pro Thr Leu Phe Arg Val					

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1585          1590          1595          1600
Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Lys Gly Ala
          1605          1610          1615
Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala
          1620          1625          1630
Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala
          1635          1640          1645
Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys Lys Glu Asp Gly Ile
          1650          1655          1660
Asn Asp Met Phe Asn Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu
1665          1670          1675          1680
Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile
          1685          1690          1695
Leu Asn Ser Lys Pro Pro Asp Cys Asp Pro Lys Lys Val His Pro Gly
          1700          1705          1710
Ser Ser Val Glu Gly Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Tyr
          1715          1720          1725
Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr
          1730          1735          1740
Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Thr
1745          1750          1755          1760
Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu
          1765          1770          1775
Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu Phe Ser Lys Leu Ser
          1780          1785          1790
Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn
          1795          1800          1805
Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg
          1810          1815          1820
Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly
1825          1830          1835          1840
Glu Ser Gly Glu Met Asp Ser Leu Arg Ser Gln Met Glu Glu Arg Phe
          1845          1850          1855
Met Ser Ala Asn Pro Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr
          1860          1865          1870
Leu Lys Arg Lys Gln Glu Asp Val Ser Ala Thr Val Ile Gln Arg Ala
          1875          1880          1885
Tyr Arg Arg Tyr Arg Leu Arg Gln Asn Val Lys Asn Ile Ser Ser Ile
          1890          1895          1900
Tyr Ile Lys Asp Gly Asp Arg Asp Asp Asp Leu Leu Asn Lys Lys Asp
1905          1910          1915          1920
Met Ala Phe Asp Asn Val Asn Glu Asn Ser Ser Pro Glu Lys Thr Asp
          1925          1930          1935
Ala Thr Ser Ser Thr Thr Ser Pro Pro Ser Tyr Asp Ser Val Thr Lys
          1940          1945          1950
Pro Asp Lys Glu Lys Tyr Glu Gln Asp Arg Thr Glu Lys Glu Asp Lys
          1955          1960          1965
Gly Lys Asp Ser Lys Glu Ser Lys Lys
          1970          1975

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<210> 3
<211> 1977
<212> PRT
<213> Homo Sapien

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Met Ala Met Leu Pro Pro Pro Gly Pro Gln Ser Phe Val His Phe Thr
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20 25 30
Lys Glu Pro Lys Glu Glu Lys Lys Asp Asp Asp Glu Glu Ala Pro Lys
35 40 45
Pro Ser Ser Asp Leu Glu Ala Gly Lys Gln Leu Pro Phe Ile Tyr Gly
50 55 60
Asp Ile Pro Pro Gly Met Val Ser Glu Pro Leu Glu Asp Leu Asp Pro
65 70 75 80
Tyr Tyr Ala Asp Lys Lys Thr Phe Ile Val Leu Asn Lys Gly Lys Thr
85 90 95
Ile Phe Arg Phe Asn Ala Thr Pro Ala Leu Tyr Met Leu Ser Pro Phe
100 105 110
Ser Pro Leu Arg Arg Ile Ser Ile Lys Ile Leu Val His Ser Leu Phe
115 120 125
Ser Met Leu Ile Met Cys Thr Ile Leu Thr Asn Cys Ile Phe Met Thr
130 135 140
Met Asn Asn Pro Gln Asp Trp Thr Lys Asn Val Glu Tyr Thr Phe Thr
145 150 155 160
Gly Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile Leu Ala Arg Gly Phe
165 170 175
Cys Val Gly Glu Phe Thr Phe Leu Arg Asp Pro Trp Asn Trp Leu Asp
180 185 190
Phe Val Val Ile Val Phe Ala Tyr Leu Thr Glu Phe Val Asn Leu Gly
195 200 205
Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu Arg Ala Leu Lys Thr
210 215 220
Ile Ser Val Ile Pro Gly Leu Lys Thr Ile Val Gly Ala Leu Ile Gln
225 230 235 240
Ser Val Lys Lys Leu Ser Asp Val Met Ile Leu Thr Val Phe Cys Leu
245 250 255
Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe Met Gly Asn Leu Lys
260 265 270
His Lys Cys Phe Arg Asn Ser Leu Glu Asn Asn Glu Thr Leu Glu Ser
275 280 285
Ile Met Asn Thr Leu Glu Ser Glu Glu Asp Phe Arg Lys Tyr Phe Tyr
290 295 300
Tyr Leu Glu Gly Ser Lys Asp Ala Leu Leu Cys Gly Phe Ser Thr Asp
305 310 315 320
Ser Gly Gln Cys Pro Glu Gly Tyr Thr Cys Val Lys Ile Gly Arg Asn
325 330 335
Pro Asp Tyr Gly Tyr Thr Ser Phe Asp Thr Phe Ser Trp Ala Phe Leu
340 345 350
Ala Leu Phe Arg Leu Met Thr Gln Asp Tyr Trp Glu Asn Leu Tyr Gln
355 360 365
Gln Thr Leu Arg Ala Ala Gly Lys Thr Tyr Met Ile Phe Phe Val Val
370 375 380
Val Ile Phe Leu Gly Ser Phe Tyr Leu Ile Asn Leu Ile Leu Ala Val
385 390 395 400
Val Ala Met Ala Tyr Glu Glu Gln Asn Gln Ala Asn Ile Glu Glu Ala
405 410 415
Lys Gln Lys Glu Leu Glu Phe Gln Gln Met Leu Asp Arg Leu Lys Lys
420 425 430

Glu	Gln	Glu	Glu	Ala	Glu	Ala	Ile	Ala	Ala	Ala	Ala	Ala	Glu	Tyr	Thr		
		435					440						445				
Ser	Ile	Arg	Arg	Ser	Arg	Ile	Met	Gly	Leu	Ser	Glu	Ser	Ser	Ser	Ser	Glu	
	450					455					460						
Thr	Ser	Lys	Leu	Ser	Ser	Lys	Ser	Ala	Lys	Glu	Arg	Arg	Asn	Arg	Arg		
465					470					475						480	
Lys	Lys	Lys	Asn	Gln	Lys	Lys	Leu	Ser	Ser	Gly	Glu	Glu	Lys	Gly	Asp		
			485						490					495			
Ala	Glu	Lys	Leu	Ser	Lys	Ser	Glu	Ser	Glu	Asp	Ser	Ile	Arg	Arg	Lys		
			500					505					510				
Ser	Phe	His	Leu	Gly	Val	Glu	Gly	His	Arg	Arg	Ala	His	Glu	Lys	Arg		
	515					520						525					
Leu	Ser	Thr	Pro	Asn	Gln	Ser	Pro	Leu	Ser	Ile	Arg	Gly	Ser	Leu	Phe		
	530					535					540						
Ser	Ala	Arg	Arg	Ser	Ser	Arg	Thr	Ser	Leu	Phe	Ser	Phe	Lys	Gly	Arg		
545					550					555					560		
Gly	Arg	Asp	Ile	Gly	Ser	Glu	Thr	Glu	Phe	Ala	Asp	Asp	Glu	His	Ser		
			565					570						575			
Ile	Phe	Gly	Asp	Asn	Glu	Ser	Arg	Arg	Gly	Ser	Leu	Phe	Val	Pro	His		
		580						585					590				
Arg	Pro	Gln	Glu	Arg	Arg	Ser	Ser	Asn	Ile	Ser	Gln	Ala	Ser	Arg	Ser		
		595					600					605					
Pro	Pro	Met	Leu	Pro	Val	Asn	Gly	Lys	Met	His	Ser	Ala	Val	Asp	Cys		
	610					615					620						
Asn	Gly	Val	Val	Ser	Leu	Val	Asp	Gly	Arg	Ser	Ala	Leu	Met	Leu	Pro		
625					630					635					640		
Asn	Gly	Gln	Leu	Leu	Pro	Glu	Gly	Thr	Thr	Asn	Gln	Ile	His	Lys	Lys		
			645					650					655				
Arg	Arg	Cys	Ser	Ser	Tyr	Leu	Leu	Ser	Glu	Asp	Met	Leu	Asn	Asp	Pro		
			660					665					670				
Asn	Leu	Arg	Gln	Arg	Ala	Met	Ser	Arg	Ala	Ser	Ile	Leu	Thr	Asn	Thr		
	675					680						685					
Val	Glu	Glu	Leu	Glu	Glu	Ser	Arg	Gln	Lys	Cys	Pro	Pro	Trp	Trp	Tyr		
	690					695					700						
Arg	Phe	Ala	His	Lys	Phe	Leu	Ile	Trp	Asn	Cys	Ser	Pro	Tyr	Trp	Ile		
705					710					715					720		
Lys	Phe	Lys	Lys	Cys	Ile	Tyr	Phe	Ile	Val	Met	Asp	Pro	Phe	Val	Asp		
			725					730						735			
Leu	Ala	Ile	Thr	Ile	Cys	Ile	Val	Leu	Asn	Thr	Leu	Phe	Met	Ala	Met		
			740					745					750				
Glu	His	His	Pro	Met	Thr	Glu	Glu	Phe	Lys	Asn	Val	Leu	Ala	Ile	Gly		
	755					760						765					
Asn	Leu	Val	Phe	Thr	Gly	Ile	Phe	Ala	Ala	Glu	Met	Val	Leu	Lys	Leu		
	770					775					780						
Ile	Ala	Met	Asp	Pro	Tyr	Glu	Tyr	Phe	Gln	Val	Gly	Trp	Asn	Ile	Phe		
785					790					795					800		
Asp	Ser	Leu	Ile	Val	Thr	Leu	Ser	Leu	Val	Glu	Leu	Phe	Leu	Ala	Asp		
			805					810						815			
Val	Glu	Gly	Leu	Ser	Val	Leu	Arg	Ser	Phe	Arg	Leu	Leu	Arg	Val	Phe		
			820					825					830				
Lys	Leu	Ala	Lys	Ser	Trp	Pro	Thr	Leu	Asn	Met	Leu	Ile	Lys	Ile	Ile		
		835					840					845					
Gly	Asn	Ser	Val	Gly	Ala	Leu	Gly	Asn	Leu	Thr	Leu	Val	Leu	Ala	Ile		
	850					855					860						
Ile	Val	Phe	Ile	Phe	Ala	Val	Val	Gly	Met	Gln	Leu	Phe	Gly	Lys	Ser		
865					870					875					880		

Tyr Lys Glu Cys Val Cys Lys Ile Asn Asp Asp Cys Thr Leu Pro Arg
 885 890 895
 Trp His Met Asn Asp Phe Phe His Ser Phe Leu Ile Val Phe Arg Val
 900 905 910
 Leu Cys Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ala
 915 920 925
 Gly Gln Ala Met Cys Leu Ile Val Tyr Met Met Val Met Val Ile Gly
 930 935 940
 Asn Leu Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe
 945 950 955 960
 Ser Ser Asp Asn Leu Thr Ala Ile Glu Glu Asp Pro Asp Ala Asn Asn
 965 970 975
 Leu Gln Ile Ala Val Thr Arg Ile Lys Lys Gly Ile Asn Tyr Val Lys
 980 985 990
 Gln Thr Leu Arg Glu Phe Ile Leu Lys Ala Phe Ser Lys Lys Pro Lys
 995 1000 1005
 Ile Ser Arg Glu Ile Arg Gln Ala Glu Asp Leu Asn Thr Lys Lys Glu
 1010 1015 1020
 Asn Tyr Ile Ser Asn His Thr Leu Ala Glu Met Ser Lys Gly His Asn
 1025 1030 1035 1040
 Phe Leu Lys Glu Lys Asp Lys Ile Ser Gly Phe Gly Ser Ser Val Asp
 1045 1050 1055
 Lys His Leu Met Glu Asp Ser Asp Gly Gln Ser Phe Ile His Asn Pro
 1060 1065 1070
 Ser Leu Thr Val Thr Val Pro Ile Ala Pro Gly Glu Ser Asp Leu Glu
 1075 1080 1085
 Asn Met Asn Ala Glu Glu Leu Ser Ser Asp Ser Asp Ser Glu Tyr Ser
 1090 1095 1100
 Lys Val Arg Leu Asn Arg Ser Ser Ser Ser Glu Cys Ser Thr Val Asp
 1105 1110 1115 1120
 Asn Pro Leu Pro Gly Glu Gly Glu Glu Ala Glu Ala Glu Pro Met Asn
 1125 1130 1135
 Ser Asp Glu Pro Glu Ala Cys Phe Thr Asp Gly Cys Val Arg Arg Phe
 1140 1145 1150
 Ser Cys Cys Gln Val Asn Ile Glu Ser Gly Lys Gly Lys Ile Trp Trp
 1155 1160 1165
 Asn Ile Arg Lys Thr Cys Tyr Lys Ile Val Glu His Ser Trp Phe Glu
 1170 1175 1180
 Ser Phe Ile Val Leu Met Ile Leu Leu Ser Ser Gly Ala Leu Ala Phe
 1185 1190 1195 1200
 Glu Asp Ile Tyr Ile Glu Arg Lys Lys Thr Ile Lys Ile Ile Leu Glu
 1205 1210 1215
 Tyr Ala Asp Lys Ile Phe Thr Tyr Ile Phe Ile Leu Glu Met Leu Leu
 1220 1225 1230
 Lys Trp Ile Ala Tyr Gly Tyr Lys Thr Tyr Phe Thr Asn Ala Trp Cys
 1235 1240 1245
 Trp Leu Asp Phe Leu Ile Val Asp Val Ser Leu Val Thr Leu Val Ala
 1250 1255 1260
 Asn Thr Leu Gly Tyr Ser Asp Leu Gly Pro Ile Lys Ser Leu Arg Thr
 1265 1270 1275 1280
 Leu Arg Ala Leu Arg Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met
 1285 1290 1295
 Arg Val Val Val Asn Ala Leu Ile Gly Ala Ile Pro Ser Ile Met Asn
 1300 1305 1310
 Val Leu Leu Val Cys Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly
 1315 1320 1325

Val Asn Leu Phe Ala Gly Lys Phe Tyr Glu Cys Ile Asn Thr Thr Asp
 1330 1335 1340
 Gly Ser Arg Phe Pro Ala Ser Gln Val Pro Asn Arg Ser Glu Cys Phe
 1345 1350 1355 1360
 Ala Leu Met Asn Val Ser Gln Asn Val Arg Trp Lys Asn Leu Lys Val
 1365 1370 1375
 Asn Phe Asp Asn Val Gly Leu Gly Tyr Leu Ser Leu Leu Gln Val Ala
 1380 1385 1390
 Thr Phe Lys Gly Trp Thr Ile Ile Met Tyr Ala Ala Val Asp Ser Val
 1395 1400 1405
 Asn Val Asp Lys Gln Pro Lys Tyr Glu Tyr Ser Leu Tyr Met Tyr Ile
 1410 1415 1420
 Tyr Phe Val Val Phe Ile Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu
 1425 1430 1435 1440
 Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln Gln Lys Lys Lys Leu
 1445 1450 1455
 Gly Gly Gln Asp Ile Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn
 1460 1465 1470
 Ala Met Lys Lys Leu Gly Ser Lys Lys Pro Gln Lys Pro Ile Pro Arg
 1475 1480 1485
 Pro Gly Asn Lys Ile Gln Gly Cys Ile Phe Asp Leu Val Thr Asn Gln
 1490 1495 1500
 Ala Phe Asp Ile Ser Ile Met Val Leu Ile Cys Leu Asn Met Val Thr
 1505 1510 1515 1520
 Met Met Val Glu Lys Glu Gly Gln Ser Gln His Met Thr Glu Val Leu
 1525 1530 1535
 Tyr Trp Ile Asn Val Val Phe Ile Ile Leu Phe Thr Gly Glu Cys Val
 1540 1545 1550
 Leu Lys Leu Ile Ser Leu Arg His Tyr Tyr Phe Thr Val Gly Trp Asn
 1555 1560 1565
 Ile Phe Asp Phe Val Val Val Ile Ile Ser Ile Val Gly Met Phe Leu
 1570 1575 1580
 Ala Asp Leu Ile Glu Thr Tyr Phe Val Ser Pro Thr Leu Phe Arg Val
 1585 1590 1595 1600
 Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Lys Gly Ala
 1605 1610 1615
 Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala
 1620 1625 1630
 Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala
 1635 1640 1645
 Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys Lys Glu Asp Gly Ile
 1650 1655 1660
 Asn Asp Met Phe Asn Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu
 1665 1670 1675 1680
 Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile
 1685 1690 1695
 Leu Asn Ser Lys Pro Pro Asp Cys Asp Pro Lys Lys Val His Pro Gly
 1700 1705 1710
 Ser Ser Val Glu Gly Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Tyr
 1715 1720 1725
 Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr
 1730 1735 1740
 Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Thr
 1745 1750 1755 1760
 Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu
 1765 1770 1775

Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu Phe Ser Lys Leu Ser
 1780 1785 1790
 Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn
 1795 1800 1805
 Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg
 1810 1815 1820
 Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly
 1825 1830 1835 1840
 Glu Ser Gly Glu Met Asp Ser Leu Arg Ser Gln Met Glu Glu Arg Phe
 1845 1850 1855
 Met Ser Ala Asn Pro Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr
 1860 1865 1870
 Leu Lys Arg Lys Gln Glu Asp Val Ser Ala Thr Val Ile Gln Arg Ala
 1875 1880 1885
 Tyr Arg Arg Tyr Arg Leu Arg Gln Asn Val Lys Asn Ile Ser Ser Ile
 1890 1895 1900
 Tyr Ile Lys Asp Gly Asp Arg Asp Asp Asp Leu Leu Asn Lys Lys Asp
 1905 1910 1915 1920
 Met Ala Phe Asp Asn Val Asn Glu Asn Ser Ser Pro Glu Lys Thr Asp
 1925 1930 1935
 Ala Thr Ser Ser Thr Thr Ser Pro Pro Ser Tyr Asp Ser Val Thr Lys
 1940 1945 1950
 Pro Asp Lys Glu Lys Tyr Glu Gln Asp Arg Thr Glu Lys Glu Asp Lys
 1955 1960 1965
 Gly Lys Asp Ser Lys Glu Ser Lys Lys
 1970 1975

<210> 4
 <211> 1977
 <212> PRT
 <213> Homo Sapien

<400> 4
 Met Ala Met Leu Pro Pro Pro Gly Pro Gln Ser Phe Val His Phe Thr
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 Lys Gln Ser Leu Ala Leu Ile Glu Gln Arg Ile Ala Glu Arg Lys Ser
 20 25 30
 Lys Glu Pro Lys Glu Glu Lys Lys Asp Asp Asp Glu Glu Ala Pro Lys
 35 40 45
 Pro Ser Ser Asp Leu Glu Ala Gly Lys Gln Leu Pro Phe Ile Tyr Gly
 50 55 60
 Asp Ile Pro Pro Gly Met Val Ser Glu Pro Leu Glu Asp Leu Asp Pro
 65 70 75 80
 Tyr Tyr Ala Asp Lys Lys Thr Phe Ile Val Leu Asn Lys Gly Lys Thr
 85 90 95
 Ile Phe Arg Phe Asn Ala Thr Pro Ala Leu Tyr Met Leu Ser Pro Phe
 100 105 110
 Ser Pro Leu Arg Arg Ile Ser Ile Lys Ile Leu Val His Ser Leu Phe
 115 120 125
 Ser Met Leu Ile Met Cys Thr Ile Leu Thr Asn Cys Ile Phe Met Thr
 130 135 140
 Met Asn Asn Pro Pro Asp Trp Thr Lys Asn Val Glu Tyr Thr Phe Thr
 145 150 155 160
 Gly Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile Leu Ala Arg Gly Phe

				165						170						175	
Cys	Val	Gly	Glu	Phe	Thr	Phe	Leu	Arg	Asp	Pro	Trp	Asn	Trp	Leu	Asp		
			180					185					190				
Phe	Val	Val	Ile	Val	Phe	Ala	Tyr	Leu	Thr	Glu	Phe	Val	Asn	Leu	Gly		
		195					200					205					
Asn	Val	Ser	Ala	Leu	Arg	Thr	Phe	Arg	Val	Leu	Arg	Ala	Leu	Lys	Thr		
	210					215				220							
Ile	Ser	Val	Ile	Pro	Gly	Leu	Lys	Thr	Ile	Val	Gly	Ala	Leu	Ile	Gln		
225					230					235					240		
Ser	Val	Lys	Lys	Leu	Ser	Asp	Val	Met	Ile	Leu	Thr	Val	Phe	Cys	Leu		
				245					250					255			
Ser	Val	Phe	Ala	Leu	Ile	Gly	Leu	Gln	Leu	Phe	Met	Gly	Asn	Leu	Lys		
			260					265					270				
His	Lys	Cys	Phe	Arg	Asn	Ser	Leu	Glu	Asn	Asn	Glu	Thr	Leu	Glu	Ser		
		275					280					285					
Ile	Met	Asn	Thr	Leu	Glu	Ser	Glu	Glu	Asp	Phe	Arg	Lys	Tyr	Phe	Tyr		
	290					295				300							
Tyr	Leu	Glu	Gly	Ser	Lys	Asp	Ala	Leu	Leu	Cys	Gly	Phe	Ser	Thr	Asp		
305					310					315					320		
Ser	Gly	Gln	Cys	Pro	Glu	Gly	Tyr	Thr	Cys	Val	Lys	Ile	Gly	Arg	Asn		
				325					330					335			
Pro	Asp	Tyr	Gly	Tyr	Thr	Ser	Phe	Asp	Thr	Phe	Ser	Trp	Ala	Phe	Leu		
			340					345					350				
Ala	Leu	Phe	Arg	Leu	Met	Thr	Gln	Asp	Tyr	Trp	Glu	Asn	Leu	Tyr	Gln		
		355					360					365					
Gln	Thr	Leu	Arg	Ala	Ala	Gly	Lys	Thr	Tyr	Met	Ile	Phe	Phe	Val	Val		
					375					380							
Val	Ile	Phe	Leu	Gly	Ser	Phe	Tyr	Leu	Ile	Asn	Leu	Ile	Leu	Ala	Val		
385					390					395					400		
Val	Ala	Met	Ala	Tyr	Glu	Glu	Gln	Asn	Gln	Ala	Asn	Ile	Glu	Glu	Ala		
				405					410					415			
Lys	Gln	Lys	Glu	Leu	Glu	Phe	Gln	Gln	Met	Leu	Asp	Arg	Leu	Lys	Lys		
			420					425					430				
Glu	Gln	Glu	Glu	Ala	Glu	Ala	Ile	Ala	Ala	Ala	Ala	Ala	Glu	Tyr	Thr		
		435					440			445							
Ser	Ile	Arg	Arg	Ser	Arg	Ile	Met	Gly	Leu	Ser	Glu	Ser	Ser	Ser	Glu		
	450					455				460							
Thr	Ser	Lys	Leu	Ser	Ser	Lys	Ser	Ala	Lys	Glu	Arg	Arg	Asn	Arg	Arg		
465					470				475					480			
Lys	Lys	Lys	Asn	Gln	Lys	Lys	Leu	Ser	Ser	Gly	Glu	Glu	Lys	Gly	Asp		
				485					490					495			
Ala	Glu	Lys	Leu	Ser	Lys	Ser	Glu	Ser	Glu	Asp	Ser	Ile	Arg	Arg	Lys		
			500					505			</						

610	615	620
Asn Gly Val Val Ser Leu Val Asp Gly Arg Ser Ala Leu Met Leu Pro		
625	630	635
Tyr Gly Gln Leu Leu Pro Glu Gly Thr Thr Asn Gln Ile His Lys Lys		
	645	650
Arg Arg Cys Ser Ser Tyr Leu Leu Ser Glu Asp Met Leu Asn Asp Pro		
	660	665
Asn Leu Arg Gln Arg Ala Met Ser Arg Ala Ser Ile Leu Thr Asn Thr		
	675	680
Val Glu Glu Leu Glu Glu Ser Arg Gln Lys Cys Pro Pro Trp Trp Tyr		
	690	695
Arg Phe Ala His Lys Phe Leu Ile Trp Asn Cys Ser Pro Tyr Trp Ile		
705	710	715
Lys Phe Lys Lys Cys Ile Tyr Phe Ile Val Met Asp Pro Phe Val Asp		
	725	730
Leu Ala Ile Thr Ile Cys Ile Val Leu Asn Thr Leu Phe Met Ala Met		
	740	745
Glu His His Pro Met Thr Glu Glu Phe Lys Asn Val Leu Ala Ile Gly		
	755	760
Asn Leu Val Phe Thr Gly Ile Phe Ala Ala Glu Met Val Leu Lys Leu		
	770	775
Ile Ala Met Asp Pro Tyr Glu Tyr Phe Gln Val Gly Trp Asn Ile Phe		
785	790	795
Asp Ser Leu Ile Val Thr Leu Ser Leu Val Glu Leu Phe Leu Ala Asp		
	805	810
Val Glu Gly Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe		
	820	825
Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Met Leu Ile Lys Ile Ile		
	835	840
Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile		
	850	855
Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Ser		
865	870	875
Tyr Lys Glu Cys Val Cys Lys Ile Asn Asp Asp Cys Thr Leu Pro Arg		
	885	890
Trp His Met Asn Asp Phe Phe His Ser Phe Leu Ile Val Phe Arg Val		
	900	905
Leu Cys Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ala		
	915	920
Gly Gln Ala Met Cys Leu Ile Val Tyr Met Met Val Met Val Ile Gly		
	930	935
Asn Leu Val Val Leu Asn Leu Phe Leu Ala Leu Leu Ser Ser Phe		
945	950	955
Ser Ser Asp Asn Leu Thr Ala Ile Glu Glu Asp Pro Asp Ala Asn Asn		
	965	970
Leu Gln Ile Ala Val Thr Arg Ile Lys Lys Gly Ile Asn Tyr Val Lys		
	980	985
Gln Thr Leu Arg Glu Phe Ile Leu Lys Ala Phe Ser Lys Lys Pro Lys		
	995	1000
Ile Ser Arg Glu Ile Arg Gln Ala Glu Asp Leu Asn Thr Lys Lys Glu		
	1010	1015
Asn Tyr Ile Ser Asn His Thr Leu Ala Glu Met Ser Lys Gly His Asn		
1025	1030	1035
Phe Leu Lys Glu Lys Asp Lys Ile Ser Gly Phe Gly Ser Ser Val Asp		
	1045	1050
Lys His Leu Met Glu Asp Ser Asp Gly Gln Ser Phe Ile His Asn Pro		
		1055

1060					1065					1070					
Ser	Leu	Thr	Val	Thr	Val	Pro	Ile	Ala	Pro	Gly	Glu	Ser	Asp	Leu	Glu
1075					1080					1085					
Asn	Met	Asn	Ala	Glu	Glu	Leu	Ser	Ser	Asp	Ser	Asp	Ser	Glu	Tyr	Ser
1090					1095					1100					
Lys	Val	Arg	Leu	Asn	Arg	Ser	Ser	Ser	Ser	Glu	Cys	Ser	Thr	Val	Asp
1105					1110					1115					
Asn	Pro	Leu	Pro	Gly	Glu	Gly	Glu	Glu	Ala	Glu	Ala	Glu	Pro	Met	Asn
1125					1130					1135					
Ser	Asp	Glu	Pro	Glu	Ala	Cys	Phe	Thr	Asp	Gly	Cys	Val	Arg	Arg	Phe
1140					1145					1150					
Ser	Cys	Cys	Gln	Val	Asn	Ile	Glu	Ser	Gly	Lys	Gly	Lys	Ile	Trp	Trp
1155					1160					1165					
Asn	Ile	Arg	Lys	Thr	Cys	Tyr	Lys	Ile	Val	Glu	His	Ser	Trp	Phe	Glu
1170					1175					1180					
Ser	Phe	Ile	Val	Leu	Met	Ile	Leu	Leu	Ser	Ser	Gly	Ala	Leu	Ala	Phe
1185					1190					1195					
Glu	Asp	Ile	Tyr	Ile	Glu	Arg	Lys	Lys	Thr	Ile	Lys	Ile	Ile	Leu	Glu
1205					1210					1215					
Tyr	Ala	Asp	Lys	Ile	Phe	Thr	Tyr	Ile	Phe	Ile	Leu	Glu	Met	Leu	Leu
1220					1225					1230					
Lys	Trp	Ile	Ala	Tyr	Gly	Tyr	Lys	Thr	Tyr	Phe	Thr	Asn	Ala	Trp	Cys
1235					1240					1245					
Trp	Leu	Asp	Phe	Leu	Ile	Val	Asp	Val	Ser	Leu	Val	Thr	Leu	Val	Ala
1250					1255					1260					
Asn	Thr	Leu	Gly	Tyr	Ser	Asp	Leu	Gly	Pro	Ile	Lys	Ser	Leu	Arg	Thr
1265					1270					1275					
Leu	Arg	Ala	Leu	Arg	Pro	Leu	Arg	Ala	Leu	Ser	Arg	Phe	Glu	Gly	Met
1285					1290					1295					
Arg	Val	Val	Val	Asn	Ala	Leu	Ile	Gly	Ala	Ile	Pro	Ser	Ile	Met	Asn
1300					1305					1310					
Val	Leu	Leu	Val	Cys	Leu	Ile	Phe	Trp	Leu	Ile	Phe	Ser	Ile	Met	Gly
1315					1320					1325					
Val	Asn	Leu	Phe	Ala	Gly	Lys	Phe	Tyr	Glu	Cys	Ile	Asn	Thr	Thr	Asp
1330					1335					1340					
Gly	Ser	Arg	Phe	Pro	Ala	Ser	Gln	Val	Pro	Asn	Arg	Ser	Glu	Cys	Phe
1345					1350					1355					
Ala	Leu	Met	Asn	Val	Ser	Gln	Asn	Val	Arg	Trp	Lys	Asn	Leu	Lys	Val
1365					1370					1375					
Asn	Phe	Asp	Asn	Val	Gly	Leu	Gly	Tyr	Leu	Ser	Leu	Leu	Gln	Val	Ala
1380					1385					1390					
Thr	Phe	Lys	Gly	Trp	Thr	Ile	Ile	Met	Tyr	Ala	Ala	Val	Asp	Ser	Val
1395					1400					1405					
Asn	Val	Asp	Lys	Gln	Pro	Lys	Tyr	Glu	Tyr	Ser	Leu	Tyr	Met	Tyr	Ile
1410					1415					1420					
Tyr	Phe	Val	Val	Phe	Ile	Ile	Phe	Gly	Ser	Phe	Phe	Thr	Leu	Asn	Leu
1425					1430					1435					
Phe	Ile	Gly	Val	Ile	Ile	Asp	Asn	Phe	Asn	Gln	Lys	Lys	Lys	Lys	Leu
1445					1450					1455					
Gly	Gly	Gln	Asp	Ile	Phe	Met	Thr	Glu	Glu	Gln	Lys	Lys	Tyr	Tyr	Asn
1460					1465					1470					
Ala	Met	Lys	Lys	Leu	Gly	Ser	Lys	Lys	Pro	Gln	Lys	Pro	Ile	Pro	Arg
1475					1480					1485					
Pro	Gly	Asn	Lys	Ile	Gln	Gly	Cys	Ile	Phe	Asp	Leu	Val	Thr	Asn	Gln
1490					1495					1500					
Ala	Phe	Asp	Ile	Ser	Ile	Met	Val	Leu	Ile	Cys	Leu	Asn	Met	Val	Thr

1505		1510		1515		1520
Met Met Val Glu Lys Glu Gly Gln Ser Gln His Met Thr Glu Val Leu						
	1525		1530		1535	
Tyr Trp Ile Asn Val Val Phe Ile Ile Leu Phe Thr Gly Glu Cys Val						
	1540		1545		1550	
Leu Lys Leu Ile Ser Leu Arg His Tyr Tyr Phe Thr Val Gly Trp Asn						
	1555		1560		1565	
Ile Phe Asp Phe Val Val Val Ile Ile Ser Ile Val Gly Met Phe Leu						
	1570		1575		1580	
Ala Asp Leu Ile Glu Thr Tyr Phe Val Ser Pro Thr Leu Phe Arg Val						
1585	1590		1595		1600	
Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Lys Gly Ala						
	1605		1610		1615	
Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala						
	1620		1625		1630	
Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala						
	1635		1640		1645	
Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys Lys Glu Asp Gly Ile						
	1650		1655		1660	
Asn Asp Met Phe Asn Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu						
1665	1670		1675		1680	
Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile						
	1685		1690		1695	
Leu Asn Ser Lys Pro Pro Asp Cys Asp Pro Lys Lys Val His Pro Gly						
	1700		1705		1710	
Ser Ser Val Glu Gly Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Tyr						
	1715		1720		1725	
Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val Val Asn Met Tyr						
	1730		1735		1740	
Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Thr						
1745	1750		1755		1760	
Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu						
	1765		1770		1775	
Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu Phe Ser Lys Leu Ser						
	1780		1785		1790	
Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn						
	1795		1800		1805	
Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg						
	1810		1815		1820	
Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly						
1825	1830		1835		1840	
Glu Ser Gly Glu Met Asp Ser Leu Arg Ser Gln Met Glu Glu Arg Phe						
	1845		1850		1855	
Met Ser Ala Asn Pro Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr						
	1860		1865		1870	
Leu Lys Arg Lys Gln Glu Asp Val Ser Ala Thr Val Ile Gln Arg Ala						
	1875		1880		1885	
Tyr Arg Arg Tyr Arg Leu Arg Gln Asn Val Lys Asn Ile Ser Ser Ile						
	1890		1895		1900	
Tyr Ile Lys Asp Gly Asp Arg Asp Asp Asp Leu Leu Asn Lys Lys Asp						
1905	1910		1915		1920	
Met Ala Phe Asp Asn Val Asn Glu Asn Ser Ser Pro Glu Lys Thr Asp						
	1925		1930		1935	
Ala Thr Ser Ser Thr Thr Ser Pro Pro Ser Tyr Asp Ser Val Thr Lys						
	1940		1945		1950	
Pro Asp Lys Glu Lys Tyr Glu Gln Asp Arg Thr Glu Lys Glu Asp Lys						

1955 1960 1965
 Gly Lys Asp Ser Lys Glu Ser Lys Lys
 1970 1975

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 <211> 1977
 <212> PRT
 <213> Homo Sapien

<400> 5
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 Lys Gln Ser Leu Ala Leu Ile Glu Gln Arg Ile Ala Glu Arg Lys Ser
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 Lys Glu Pro Lys Glu Glu Lys Lys Asp Asp Asp Glu Glu Ala Pro Lys
 35 40 45
 Pro Ser Ser Asp Leu Glu Ala Gly Lys Gln Leu Pro Phe Ile Tyr Gly
 50 55 60
 Asp Ile Pro Pro Gly Met Val Ser Glu Pro Leu Glu Asp Leu Asp Pro
 65 70 75 80
 Tyr Tyr Ala Asp Lys Lys Thr Phe Ile Val Leu Asn Lys Gly Lys Thr
 85 90 95
 Ile Phe Arg Phe Asn Ala Thr Pro Ala Leu Tyr Met Leu Ser Pro Phe
 100 105 110
 Ser Pro Leu Arg Arg Ile Ser Ile Lys Ile Leu Val His Ser Leu Phe
 115 120 125
 Ser Met Leu Ile Met Cys Thr Ile Leu Thr Asn Cys Ile Phe Met Thr
 130 135 140
 Met Asn Asn Pro Pro Asp Trp Thr Lys Asn Val Glu Tyr Thr Phe Thr
 145 150 155 160
 Gly Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile Leu Ala Arg Gly Phe
 165 170 175
 Cys Val Gly Glu Phe Thr Phe Leu Arg Asp Pro Trp Asn Trp Leu Asp
 180 185 190
 Phe Val Val Ile Val Phe Ala Tyr Leu Thr Glu Phe Val Asn Leu Gly
 195 200 205
 Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu Arg Ala Leu Lys Thr
 210 215 220
 Ile Ser Val Ile Pro Gly Leu Lys Thr Ile Val Gly Ala Leu Ile Gln
 225 230 235 240
 Ser Val Lys Lys Leu Ser Asp Val Met Ile Leu Thr Val Phe Cys Leu
 245 250 255
 Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe Met Gly Asn Leu Lys
 260 265 270
 His Lys Cys Phe Arg Asn Ser Leu Glu Asn Asn Glu Thr Leu Glu Ser
 275 280 285
 Ile Met Asn Thr Leu Glu Ser Glu Glu Asp Phe Arg Lys Tyr Phe Tyr
 290 295 300
 Tyr Leu Glu Gly Ser Lys Asp Ala Leu Leu Cys Gly Phe Ser Thr Asp
 305 310 315 320
 Ser Gly Gln Cys Pro Glu Gly Tyr Thr Cys Val Lys Ile Gly Arg Asn
 325 330 335
 Pro Asp Tyr Gly Tyr Thr Ser Phe Asp Thr Phe Ser Trp Ala Phe Leu
 340 345 350

Ala	Leu	Phe	Arg	Leu	Met	Thr	Gln	Asp	Tyr	Trp	Glu	Asn	Leu	Tyr	Gln		
		355					360					365					
Gln	Thr	Leu	Arg	Ala	Ala	Gly	Lys	Thr	Tyr	Met	Ile	Phe	Phe	Val	Val		
	370					375					380						
Val	Ile	Phe	Leu	Gly	Ser	Phe	Tyr	Leu	Ile	Asn	Leu	Ile	Leu	Ala	Val		
385					390					395					400		
Val	Ala	Met	Ala	Tyr	Glu	Glu	Gln	Asn	Gln	Ala	Asn	Ile	Glu	Glu	Ala		
			405						410						415		
Lys	Gln	Lys	Glu	Leu	Glu	Phe	Gln	Gln	Met	Leu	Asp	Arg	Leu	Lys	Lys		
			420					425					430				
Glu	Gln	Glu	Glu	Ala	Glu	Ala	Ile	Ala	Ala	Ala	Ala	Ala	Glu	Tyr	Thr		
	435					440						445					
Ser	Ile	Arg	Arg	Ser	Arg	Ile	Met	Gly	Leu	Ser	Glu	Ser	Ser	Ser	Glu		
	450					455					460						
Thr	Ser	Lys	Leu	Ser	Ser	Lys	Ser	Ala	Lys	Glu	Arg	Arg	Asn	Arg	Arg		
465					470					475					480		
Lys	Lys	Lys	Asn	Gln	Lys	Lys	Leu	Ser	Ser	Gly	Glu	Glu	Lys	Gly	Asp		
			485						490					495			
Ala	Glu	Lys	Leu	Ser	Lys	Ser	Glu	Ser	Glu	Asp	Ser	Ile	Arg	Arg	Lys		
		500						505					510				
Ser	Phe	His	Leu	Gly	Val	Glu	Gly	His	Arg	Arg	Ala	His	Glu	Lys	Arg		
	515					520						525					
Leu	Ser	Thr	Pro	Asn	Gln	Ser	Pro	Leu	Ser	Ile	Arg	Gly	Ser	Leu	Phe		
	530				535						540						
Ser	Ala	Arg	Arg	Ser	Ser	Arg	Thr	Ser	Leu	Phe	Ser	Phe	Lys	Gly	Arg		
545					550					555					560		
Gly	Arg	Asp	Ile	Gly	Ser	Glu	Thr	Glu	Phe	Ala	Asp	Asp	Glu	His	Ser		
			565					570						575			
Ile	Phe	Gly	Asp	Asn	Glu	Ser	Arg	Arg	Gly	Ser	Leu	Phe	Val	Pro	His		
		580						585					590				
Arg	Pro	Gln	Glu	Arg	Arg	Ser	Ser	Asn	Ile	Ser	Gln	Ala	Ser	Arg	Ser		
	595					600						605					
Pro	Pro	Met	Leu	Pro	Val	Asn	Gly	Lys	Met	His	Ser	Ala	Val	Asp	Cys		
	610				615						620						
Asn	Gly	Val	Val	Ser	Leu	Val	Asp	Gly	Arg	Ser	Ala	Leu	Met	Leu	Pro		
625					630					635					640		
Asn	Gly	Gln	Leu	Leu	Pro	Glu	Gly	Thr	Thr	Asn	Gln	Ile	His	Arg	Lys		
			645					650						655			
Arg	Arg	Cys	Ser	Ser	Tyr	Leu	Leu	Ser	Glu	Asp	Met	Leu	Asn	Asp	Pro		
		660						665					670				
Asn	Leu	Arg	Gln	Arg	Ala	Met	Ser	Arg	Ala	Ser	Ile	Leu	Thr	Asn	Thr		
	675					680						685					
Val	Glu	Glu	Leu	Glu	Glu	Ser	Arg	Gln	Lys	Cys	Pro	Pro	Trp	Trp	Tyr		
	690				695						700						
Arg	Phe	Ala	His	Lys	Phe	Leu	Ile	Trp	Asn	Cys	Ser	Pro	Tyr	Trp	Ile		
705					710					715					720		
Lys	Phe	Lys	Lys	Cys	Ile	Tyr	Phe	Ile	Val	Met	Asp	Pro	Phe	Val	Asp		
			725					730						735			
Leu	Ala	Ile	Thr	Ile	Cys	Ile	Val	Leu	Asn	Thr	Leu	Phe	Met	Ala	Met		
	740							745					750				
Glu	His	His	Pro	Met	Thr	Glu	Glu	Phe	Lys	Asn	Val	Leu	Ala	Ile	Gly		
	755					760						765					
Asn	Leu	Val	Phe	Thr	Gly	Ile	Phe	Ala	Ala	Glu	Met	Val	Leu	Lys	Leu		
	770				775					780							
Ile	Ala	Met	Asp	Pro	Tyr	Glu	Tyr	Phe	Gln	Val	Gly	Trp	Asn	Ile	Phe		
785					790					795					800		

Asp	Ser	Leu	Ile	Val	Thr	Leu	Ser	Leu	Val	Glu	Leu	Phe	Leu	Ala	Asp	805	810	815
Val	Glu	Gly	Leu	Ser	Val	Leu	Arg	Ser	Phe	Arg	Leu	Leu	Arg	Val	Phe	820	825	830
Lys	Leu	Ala	Lys	Ser	Trp	Pro	Thr	Leu	Asn	Met	Leu	Ile	Lys	Ile	Ile	835	840	845
Gly	Asn	Ser	Val	Gly	Ala	Leu	Gly	Asn	Leu	Thr	Leu	Val	Leu	Ala	Ile	850	855	860
Ile	Val	Phe	Ile	Phe	Ala	Val	Val	Gly	Met	Gln	Leu	Phe	Gly	Lys	Ser	865	870	875
Tyr	Lys	Glu	Cys	Val	Cys	Lys	Ile	Asn	Asp	Asp	Cys	Thr	Leu	Pro	Arg	885	890	895
Trp	His	Met	Asn	Asp	Phe	Phe	His	Ser	Phe	Leu	Ile	Val	Phe	Arg	Val	900	905	910
Leu	Cys	Gly	Glu	Trp	Ile	Glu	Thr	Met	Trp	Asp	Cys	Met	Glu	Val	Ala	915	920	925
Gly	Gln	Ala	Met	Cys	Leu	Ile	Val	Tyr	Met	Met	Val	Met	Val	Ile	Gly	930	935	940
Asn	Leu	Val	Val	Leu	Asn	Leu	Phe	Leu	Ala	Leu	Leu	Leu	Ser	Ser	Phe	945	950	955
Ser	Ser	Asp	Asn	Leu	Thr	Ala	Ile	Glu	Glu	Asp	Pro	Asp	Ala	Asn	Asn	965	970	975
Leu	Gln	Ile	Ala	Val	Thr	Arg	Ile	Lys	Lys	Gly	Ile	Asn	Tyr	Val	Lys	980	985	990
Gln	Thr	Leu	Arg	Glu	Phe	Ile	Leu	Lys	Ala	Phe	Ser	Lys	Lys	Pro	Lys	995	1000	1005
Ile	Ser	Arg	Glu	Ile	Arg	Gln	Ala	Glu	Asp	Leu	Asn	Thr	Lys	Lys	Glu	1010	1015	1020
Asn	Tyr	Ile	Ser	Asn	His	Thr	Leu	Ala	Glu	Met	Ser	Lys	Gly	His	Asn	1025	1030	1035
Phe	Leu	Lys	Glu	Lys	Asp	Lys	Ile	Ser	Gly	Phe	Gly	Ser	Ser	Val	Asp	1045	1050	1055
Lys	His	Leu	Met	Glu	Asp	Ser	Asp	Gly	Gln	Ser	Phe	Ile	His	Asn	Pro	1060	1065	1070
Ser	Leu	Thr	Val	Thr	Val	Pro	Ile	Ala	Pro	Gly	Glu	Ser	Asp	Leu	Glu	1075	1080	1085
Asn	Met	Asn	Ala	Glu	Glu	Leu	Ser	Ser	Asp	Ser	Asp	Ser	Glu	Tyr	Ser	1090	1095	1100
Lys	Val	Arg	Leu	Asn	Arg	Ser	Ser	Ser	Ser	Glu	Cys	Ser	Thr	Val	Asp	1105	1110	1115
Asn	Pro	Leu	Pro	Gly	Glu	Gly	Glu	Glu	Ala	Glu	Ala	Glu	Pro	Met	Asn	1125	1130	1135
Ser	Asp	Glu	Pro	Glu	Ala	Cys	Phe	Thr	Asp	Gly	Cys	Val	Arg	Arg	Phe	1140	1145	1150
Ser	Cys	Cys	Gln	Val	Asn	Ile	Glu	Ser	Gly	Lys	Gly	Lys	Ile	Trp	Trp	1155	1160	1165
Asn	Ile	Arg	Lys	Thr	Cys	Tyr	Lys	Ile	Val	Glu	His	Ser	Trp	Phe	Glu	1170	1175	1180
Ser	Phe	Ile	Val	Leu	Met	Ile	Leu	Leu	Ser	Ser	Gly	Ala	Leu	Ala	Phe	1185	1190	1195
Glu	Asp	Ile	Tyr	Ile	Glu	Arg	Lys	Lys	Thr	Ile	Lys	Ile	Ile	Leu	Glu	1205	1210	1215
Tyr	Ala	Asp	Lys	Ile	Phe	Thr	Tyr	Ile	Phe	Ile	Leu	Glu	Met	Leu	Leu	1220	1225	1230
Lys	Trp	Ile	Ala	Tyr	Gly	Tyr	Lys	Thr	Tyr	Phe	Thr	Asn	Ala	Trp	Cys	1235	1240	1245

Trp Leu Asp Phe Leu Ile Val Asp Val Ser Leu Val Thr Leu Val Ala
 1250 1255 1260
 Asn Thr Leu Gly Tyr Ser Asp Leu Gly Pro Ile Lys Ser Leu Arg Thr
 1265 1270 1275 1280
 Leu Arg Ala Leu Arg Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met
 1285 1290 1295
 Arg Val Val Val Asn Ala Leu Ile Gly Ala Ile Pro Ser Ile Met Asn
 1300 1305 1310
 Val Leu Leu Val Cys Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly
 1315 1320 1325
 Val Asn Leu Phe Ala Gly Lys Phe Tyr Glu Cys Ile Asn Thr Thr Asp
 1330 1335 1340
 Gly Ser Arg Phe Pro Ala Ser Gln Val Pro Asn Arg Ser Glu Cys Phe
 1345 1350 1355 1360
 Ala Leu Met Asn Val Ser Gln Asn Val Arg Trp Lys Asn Leu Lys Val
 1365 1370 1375
 Asn Phe Asp Asn Val Gly Leu Gly Tyr Leu Ser Leu Leu Gln Val Ala
 1380 1385 1390
 Thr Phe Lys Gly Trp Thr Ile Ile Met Tyr Ala Ala Val Asp Ser Val
 1395 1400 1405
 Asn Val Asp Lys Gln Pro Lys Tyr Glu Tyr Ser Leu Tyr Met Tyr Ile
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 Tyr Phe Val Val Phe Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu
 1425 1430 1435 1440
 Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln Gln Lys Lys Lys Leu
 1445 1450 1455
 Gly Gly Gln Asp Ile Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn
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 Ala Met Lys Lys Leu Gly Ser Lys Lys Pro Gln Lys Pro Ile Pro Arg
 1475 1480 1485
 Pro Gly Asn Lys Ile Gln Gly Cys Ile Phe Asp Leu Val Thr Asn Gln
 1490 1495 1500
 Ala Phe Asp Ile Ser Ile Met Val Leu Ile Cys Leu Asn Met Val Thr
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 Met Met Val Glu Lys Glu Gly Gln Ser Gln His Met Thr Glu Val Leu
 1525 1530 1535
 Tyr Trp Ile Asn Val Val Phe Ile Ile Leu Phe Thr Gly Glu Cys Val
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 Leu Lys Leu Ile Ser Leu Arg His Tyr Tyr Phe Thr Val Gly Trp Asn
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 Ile Phe Asp Phe Val Val Val Ile Ile Ser Ile Val Gly Met Phe Leu
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 Ala Asp Leu Ile Glu Thr Tyr Phe Val Ser Pro Thr Leu Phe Arg Val
 1585 1590 1595 1600
 Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Lys Gly Ala
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 Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala
 1620 1625 1630
 Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala
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 Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys Lys Glu Asp Gly Ile
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 Asn Asp Met Phe Asn Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu
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 Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile
 1685 1690 1695

Leu Asn Ser Lys Pro Pro Asp Cys Asp Pro Lys Lys Val His Pro Gly
 1700 1705 1710
 Ser Ser Val Glu Gly Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Tyr
 1715 1720 1725
 Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr
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 Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Thr
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 Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu
 1765 1770 1775
 Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu Phe Ser Lys Leu Ser
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 Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn
 1795 1800 1805
 Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg
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 Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly
 1825 1830 1835 1840
 Glu Ser Gly Glu Met Asp Ser Leu Arg Ser Gln Met Glu Glu Arg Phe
 1845 1850 1855
 Met Ser Ala Asn Pro Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr
 1860 1865 1870
 Leu Lys Arg Lys Gln Glu Asp Val Ser Ala Thr Val Ile Gln Arg Ala
 1875 1880 1885
 Tyr Arg Arg Tyr Arg Leu Arg Gln Asn Val Lys Asn Ile Ser Ser Ile
 1890 1895 1900
 Tyr Ile Lys Asp Gly Asp Arg Asp Asp Asp Leu Leu Asn Lys Lys Asp
 1905 1910 1915 1920
 Met Ala Phe Asp Asn Val Asn Glu Asn Ser Ser Pro Glu Lys Thr Asp
 1925 1930 1935
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 Gly Lys Asp Ser Lys Glu Ser Lys Lys
 1970 1975

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 <212> PRT
 <213> Homo Sapien

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 Lys Glu Pro Lys Glu Glu Lys Lys Asp Asp Asp Glu Glu Ala Pro Lys
 35 40 45
 Pro Ser Ser Asp Leu Glu Ala Gly Lys Gln Leu Pro Phe Ile Tyr Gly
 50 55 60
 Asp Ile Pro Pro Gly Met Val Ser Glu Pro Leu Glu Asp Leu Asp Pro
 65 70 75 80
 Tyr Tyr Ala Asp Lys Lys Thr Phe Ile Val Leu Asn Lys Gly Lys Thr

				85					90					95		
Ile	Phe	Arg	Phe	Asn	Ala	Thr	Pro	Ala	Leu	Tyr	Met	Leu	Ser	Pro	Phe	
			100					105					110			
Ser	Pro	Leu	Arg	Arg	Ile	Ser	Ile	Lys	Ile	Leu	Val	His	Ser	Leu	Phe	
			115				120					125				
Ser	Met	Leu	Ile	Met	Cys	Thr	Ile	Leu	Thr	Asn	Cys	Ile	Phe	Met	Thr	
			130			135					140					
Met	Asn	Asn	Pro	Pro	Asp	Trp	Thr	Lys	Asn	Val	Glu	Tyr	Thr	Phe	Thr	
145					150					155						
Gly	Ile	Tyr	Thr	Phe	Glu	Ser	Leu	Val	Lys	Ile	Leu	Ala	Arg	Gly	Phe	
				165						170				175		
Cys	Val	Gly	Glu	Phe	Thr	Phe	Leu	Arg	Asp	Pro	Trp	Asn	Trp	Leu	Asp	
			180					185					190			
Phe	Val	Val	Ile	Val	Phe	Ala	Tyr	Leu	Thr	Glu	Phe	Val	Asn	Leu	Gly	
			195				200					205				
Asn	Val	Ser	Ala	Leu	Arg	Thr	Phe	Arg	Val	Leu	Arg	Ala	Leu	Lys	Thr	
						215					220					
Ile	Ser	Val	Ile	Pro	Gly	Leu	Lys	Thr	Ile	Val	Gly	Ala	Leu	Ile	Gln	
225					230					235					240	
Ser	Val	Lys	Lys	Leu	Ser	Asp	Val	Met	Ile	Leu	Thr	Val	Phe	Cys	Leu	
				245					250					255		
Ser	Val	Phe	Ala	Leu	Ile	Gly	Leu	Gln	Leu	Phe	Met	Gly	Asn	Leu	Lys	
			260					265					270			
His	Lys	Cys	Phe	Arg	Asn	Ser	Leu	Glu	Asn	Asn	Glu	Thr	Glu	Ser		
			275				280					285				
Ile	Met	Asn	Thr	Leu	Glu	Ser	Glu	Glu	Asp	Phe	Arg	Lys	Tyr	Phe	Tyr	
						295					300					
Tyr	Leu	Glu	Gly	Ser	Lys	Asp	Ala	Leu	Leu	Cys	Gly	Phe	Ser	Thr	Asp	
305					310					315					320	
Ser	Gly	Gln	Cys	Pro	Glu	Gly	Tyr	Thr	Cys	Val	Lys	Ile	Gly	Arg	Asn	
				325					330					335		
Pro	Asp	Tyr	Gly	Tyr	Thr	Ser	Phe	Asp	Thr	Phe	Ser	Trp	Ala	Phe	Leu	
			340					345					350			
Ala	Leu	Phe	Arg	Leu	Met	Thr	Gln	Asp	Tyr	Trp	Glu	Asn	Leu	Tyr	Gln	
			355				360					365				
Gln	Thr	Leu	Arg	Ala	Ala	Gly	Lys	Thr	Tyr	Met	Ile	Phe	Phe	Val	Val	
						375					380					
Val	Ile	Phe	Leu	Gly	Ser	Phe	Tyr	Leu	Ile	Asn	Leu	Ile	Leu	Ala	Val	
385					390					395					400	
Val	Ala	Met	Ala	Tyr	Glu	Glu	Gln	Asn	Gln	Ala	Asn	Ile	Glu	Glu	Ala	
				405					410					415		
Lys	Gln	Lys	Glu	Leu	Glu	Phe	Gln	Gln	Met	Leu	Asp	Arg	Leu	Lys	Lys	
			420					425								

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Ser Ala Arg Arg Ser Ser Arg Thr Ser Leu Phe Ser Phe Lys Gly Arg				
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Gly Arg Asp Ile Gly Ser Glu Thr Glu Phe Ala Asp Asp Glu His Ser				
	565		570	
Ile Phe Gly Asp Asn Glu Ser Arg Arg Gly Ser Leu Phe Val Pro His				
	580		585	
Arg Pro Gln Glu Arg Arg Ser Ser Asn Ile Ser Gln Ala Ser Arg Ser				
	595		600	
Pro Pro Met Leu Pro Val Asn Gly Lys Met His Ser Ala Val Asp Cys				
	610		615	
Asn Gly Val Val Ser Leu Val Asp Gly Arg Ser Ala Leu Met Leu Pro				
625		630		635
Asn Gly Gln Leu Leu Pro Glu Gly Thr Thr Asn Gln Ile His Lys Lys				
	645		650	
Arg Arg Cys Ser Ser Tyr Leu Leu Ser Glu Asp Met Leu Asn Asp Pro				
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Asn Leu Arg Gln Arg Ala Met Ser Arg Ala Ser Ile Leu Thr Asn Thr				
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Val Glu Glu Leu Glu Glu Ser Arg Gln Lys Cys Pro Pro Trp Trp Tyr				
	690		695	
Arg Phe Ala His Lys Phe Leu Ile Trp Asn Cys Ser Pro Tyr Trp Ile				
705		710		715
Lys Phe Lys Lys Cys Ile Tyr Phe Ile Val Met Asp Pro Phe Val Asp				
	725		730	
Leu Ala Val Thr Ile Cys Ile Val Leu Asn Thr Leu Phe Met Ala Met				
	740		745	
Glu His His Pro Met Thr Glu Glu Phe Lys Asn Val Leu Ala Ile Gly				
	755		760	
Asn Leu Val Phe Thr Gly Ile Phe Ala Ala Glu Met Val Leu Lys Leu				
	770		775	
Ile Ala Met Asp Pro Tyr Glu Tyr Phe Gln Val Gly Trp Asn Ile Phe				
785		790		795
Asp Ser Leu Ile Val Thr Leu Ser Leu Val Glu Leu Phe Leu Ala Asp				
	805		810	
Val Glu Gly Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe				
	820		825	
Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Met Leu Ile Lys Ile Ile				
	835		840	
Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile				
	850		855	
Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Ser				
865		870		875
Tyr Lys Glu Cys Val Cys Lys Ile Asn Asp Asp Cys Thr Leu Pro Arg				
	885		890	
Trp His Met Asn Asp Phe Phe His Ser Phe Leu Ile Val Phe Arg Val				
	900		905	
Leu Cys Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ala				
	915		920	
Gly Gln Ala Met Cys Leu Ile Val Tyr Met Met Val Met Val Ile Gly				
	930		935	
Asn Leu Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe				
945		950		955
Ser Ser Asp Asn Leu Thr Ala Ile Glu Glu Asp Pro Asp Ala Asn Asn				
	965		970	
Leu Gln Ile Ala Val Thr Arg Ile Lys Lys Gly Ile Asn Tyr Val Lys				

980										985					990					
Gln	Thr	Leu	Arg	Glu	Phe	Ile	Leu	Lys	Ala	Phe	Ser	Lys	Lys	Pro	Lys					
995										1000					1005					
Ile	Ser	Arg	Glu	Ile	Arg	Gln	Ala	Glu	Asp	Leu	Asn	Thr	Lys	Lys	Glu					
1010										1015					1020					
Asn	Tyr	Ile	Ser	Asn	His	Thr	Leu	Ala	Glu	Met	Ser	Lys	Gly	His	Asn					
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Phe	Leu	Lys	Glu	Lys	Asp	Lys	Ile	Ser	Gly	Phe	Gly	Ser	Ser	Val	Asp					
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Lys	His	Leu	Met	Glu	Asp	Ser	Asp	Gly	Gln	Ser	Phe	Ile	His	Asn	Pro					
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Ser	Leu	Thr	Val	Thr	Val	Pro	Ile	Ala	Pro	Gly	Glu	Ser	Asp	Leu	Glu					
1075										1080					1085					
Asn	Met	Asn	Ala	Glu	Glu	Leu	Ser	Ser	Asp	Ser	Asp	Ser	Glu	Tyr	Ser					
1090	1095										1100									
Lys	Val	Arg	Leu	Asn	Arg	Ser	Ser	Ser	Ser	Glu	Cys	Ser	Thr	Val	Asp					
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Asn	Pro	Leu	Pro	Gly	Glu	Gly	Glu	Glu	Ala	Glu	Ala	Glu	Pro	Met	Asn					
1125										1130					1135					
Ser	Asp	Glu	Pro	Glu	Ala	Cys	Phe	Thr	Asp	Gly	Cys	Val	Arg	Arg	Phe					
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Ser	Cys	Cys	Gln	Val	Asn	Ile	Glu	Ser	Gly	Lys	Gly	Lys	Ile	Trp	Trp					
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Ser	Phe	Ile	Val	Leu	Met	Ile	Leu	Leu	Ser	Ser	Gly	Ala	Leu	Ala	Phe					
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Glu	Asp	Ile	Tyr	Ile	Glu	Arg	Lys	Lys	Thr	Ile	Lys	Ile	Ile	Leu	Glu					
1205										1210					1215					
Tyr	Ala	Asp	Lys	Ile	Phe	Thr	Tyr	Ile	Phe	Ile	Leu	Glu	Met	Leu	Leu					
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Lys	Trp	Ile	Ala	Tyr	Gly	Tyr	Lys	Thr	Tyr	Phe	Thr	Asn	Ala	Trp	Cys					
1235										1240					1245					
Trp	Leu	Asp	Phe	Leu	Ile	Val	Asp	Val	Ser	Leu	Val	Thr	Leu	Val	Ala					
1250	1255										1260									
Asn	Thr	Leu	Gly	Tyr	Ser	Asp	Leu	Gly	Pro	Ile	Lys	Ser	Leu	Arg	Thr					
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Leu	Arg	Ala	Leu	Arg	Pro	Leu	Arg	Ala	Leu	Ser	Arg	Phe	Glu	Gly	Met					
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Arg	Val	Val	Val	Asn	Ala	Leu	Ile	Gly	Ala	Ile	Pro	Ser	Ile	Met	Asn					
1300										1305					1310					
Val	Leu	Leu	Val	Cys	Leu	Ile	Phe	Trp	Leu	Ile	Phe	Ser	Ile	Met	Gly					
1315										1320					1325					
Val	Asn	Leu	Phe	Ala	Gly	Lys	Phe	Tyr	Glu	Cys	Ile	Asn	Thr	Thr	Asp					
1330										1335					1340					
Gly	Ser	Arg	Phe	Pro	Ala	Ser	Gln	Val	Pro	Asn	Arg	Ser	Glu	Cys	Phe					
1345	1350										1355					1360				
Ala	Leu	Met	Asn	Val	Ser	Gln	Asn	Val	Arg	Trp	Lys	Asn	Leu	Lys	Val					
1365										1370					1375					
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Thr	Phe	Lys	Gly	Trp	Thr	Ile	Ile	Met	Tyr	Ala	Ala	Val	Asp	Ser	Val					
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Tyr	Phe	Val	Val	Phe	Ile	Ile	Phe	Gly	Ser	Phe	Phe	Thr	Leu	Asn	Leu					

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 Gly Gly Gln Asp Ile Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn
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 Ala Met Lys Lys Leu Gly Ser Lys Lys Pro Gln Lys Pro Ile Pro Arg
 1475 1480 1485
 Pro Gly Asn Lys Ile Gln Gly Cys Ile Phe Asp Leu Val Thr Asn Gln
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 Ala Phe Asp Ile Ser Ile Met Val Leu Ile Cys Leu Asn Met Val Thr
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 Met Met Val Glu Lys Glu Gly Gln Ser Gln His Met Thr Glu Val Leu
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 Tyr Trp Ile Asn Val Val Phe Ile Ile Leu Phe Thr Gly Glu Cys Val
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 1555 1560 1565
 Ile Phe Asp Phe Val Val Val Ile Ile Ser Ile Val Gly Met Phe Leu
 1570 1575 1580
 Ala Asp Leu Ile Glu Thr Tyr Phe Val Ser Pro Thr Leu Phe Arg Val
 1585 1590 1595 1600
 Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Lys Gly Ala
 1605 1610 1615
 Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala
 1620 1625 1630
 Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala
 1635 1640 1645
 Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys Lys Glu Asp Gly Ile
 1650 1655 1660
 Asn Asp Met Phe Asn Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu
 1665 1670 1675 1680
 Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile
 1685 1690 1695
 Leu Asn Ser Lys Pro Pro Asp Cys Asp Pro Lys Lys Val His Pro Gly
 1700 1705 1710
 Ser Ser Val Glu Gly Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Tyr
 1715 1720 1725
 Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr
 1730 1735 1740
 Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Thr
 1745 1750 1755 1760
 Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu
 1765 1770 1775
 Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu Phe Ser Lys Leu Ser
 1780 1785 1790
 Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn
 1795 1800 1805
 Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg
 1810 1815 1820
 Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly
 1825 1830 1835 1840
 Glu Ser Gly Glu Met Asp Ser Leu Arg Ser Gln Met Glu Glu Arg Phe
 1845 1850 1855
 Met Ser Ala Asn Pro Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr
 1860 1865 1870
 Leu Lys Arg Lys Gln Glu Asp Val Ser Ala Thr Val Ile Gln Arg Ala

1875	1880	1885
Tyr Arg Arg Tyr Arg Leu Arg Gln Asn Val Lys Asn Ile Ser Ser Ile		
1890	1895	1900
Tyr Ile Lys Asp Gly Asp Arg Asp Asp Asp Leu Leu Asn Lys Lys Asp		
1905	1910	1915
Met Ala Phe Asp Asn Val Asn Glu Asn Ser Ser Pro Glu Lys Thr Asp		
	1925	1930
Ala Thr Ser Ser Thr Thr Ser Pro Pro Ser Tyr Asp Ser Val Thr Lys		
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Pro Asp Lys Glu Lys Tyr Glu Gln Asp Arg Thr Glu Lys Glu Asp Lys		
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Gly Lys Asp Ser Lys Glu Ser Lys Lys		1965
1970	1975	

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 <211> 1977
 <212> PRT
 <213> Homo Sapien

<400> 7

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	20
Lys Glu Pro Lys Glu Glu Lys Lys Asp Asp Asp Glu Glu Ala Pro Lys	25
	30
Pro Ser Ser Asp Leu Glu Ala Gly Lys Gln Leu Pro Phe Ile Tyr Gly	35
	40
Asp Ile Pro Pro Gly Met Val Ser Glu Pro Leu Glu Asp Leu Asp Pro	45
65	50
Tyr Tyr Ala Asp Lys Lys Thr Phe Ile Val Leu Asn Lys Gly Lys Thr	55
	60
Ile Phe Arg Phe Asn Ala Thr Pro Ala Leu Tyr Met Leu Ser Pro Phe	65
	70
Ser Pro Leu Arg Arg Ile Ser Ile Lys Ile Leu Val His Ser Leu Phe	75
	80
Ser Met Leu Ile Met Cys Thr Ile Leu Thr Asn Cys Ile Phe Met Thr	85
	90
Phe Val Val Ile Val Phe Ala Tyr Leu Thr Glu Phe Val Asn Leu Gly	95
	100
Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu Arg Ala Leu Lys Thr	105
	110
Ile Ser Val Ile Pro Gly Leu Lys Thr Ile Val Gly Ala Leu Ile Gln	115
	120
Ser Val Lys Lys Leu Ser Asp Val Met Ile Leu Thr Val Phe Cys Leu	125
	130
Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe Met Gly Asn Leu Lys	135
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	265
	270

His	Lys	Cys	Phe	Arg	Asn	Ser	Leu	Glu	Asn	Asn	Glu	Thr	Leu	Glu	Ser
Ile	Met	Asn	Thr	Leu	Glu	Ser	Glu	Glu	Asp	Phe	Arg	Lys	Tyr	Phe	Tyr
Tyr	Leu	Glu	Gly	Ser	Lys	Asp	Ala	Leu	Leu	Cys	Gly	Phe	Ser	Thr	Asp
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Ser	Gly	Gln	Cys	Pro	Glu	Gly	Tyr	Thr	Cys	Val	Lys	Ile	Gly	Arg	Asn
				325					330						335
Pro	Asp	Tyr	Gly	Tyr	Thr	Ser	Phe	Asp	Thr	Phe	Ser	Trp	Ala	Phe	Leu
			340					345							
Ala	Leu	Phe	Arg	Leu	Met	Thr	Gln	Asp	Tyr	Trp	Glu	Asn	Leu	Tyr	Gln
		355					360					365			
Gln	Thr	Leu	Arg	Ala	Ala	Gly	Lys	Thr	Tyr	Met	Ile	Phe	Phe	Val	Val
		370				375					380				
Val	Ile	Phe	Leu	Gly	Ser	Phe	Tyr	Leu	Ile	Asn	Leu	Ile	Leu	Ala	Val
385					390					395					400
Val	Ala	Met	Ala	Tyr	Glu	Glu	Gln	Asn	Gln	Ala	Asn	Ile	Glu	Glu	Ala
				405					410						415
Lys	Gln	Lys	Glu	Leu	Glu	Phe	Gln	Gln	Met	Leu	Asp	Arg	Leu	Lys	Lys
			420					425					430		
Glu	Gln	Glu	Glu	Ala	Glu	Ala	Ile	Ala	Ala	Ala	Ala	Ala	Glu	Tyr	Thr
		435					440				445				
Ser	Ile	Arg	Arg	Ser	Arg	Ile	Met	Gly	Leu	Ser	Glu	Ser	Ser	Ser	Glu
	450					455					460				
Thr	Ser	Lys	Leu	Ser	Ser	Lys	Ser	Ala	Lys	Glu	Arg	Arg	Asn	Arg	Arg
465					470					475					480
Lys	Lys	Lys	Asn	Gln	Lys	Lys	Leu	Ser	Ser	Gly	Glu	Glu	Lys	Gly	Asp
				485					490						495
Ala	Glu	Lys	Leu	Ser	Lys	Ser	Glu	Ser	Glu	Asp	Ser	Ile	Arg	Arg	Lys
			500					505					510		
Ser	Phe	His	Leu	Gly	Val	Glu	Gly	His	Arg	Arg	Ala	His	Glu	Lys	Arg
		515					520					525			
Leu	Ser	Thr	Pro	Asn	Gln	Ser	Pro	Leu	Ser	Ile	Arg	Gly	Ser	Leu	Phe
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Ser	Ala	Arg	Arg	Ser	Ser	Arg	Thr	Ser	Leu	Phe	Ser	Phe	Lys	Gly	Arg
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Gly	Arg	Asp	Ile	Gly	Ser	Glu	Thr	Glu	Phe	Ala	Asp	Asp	Glu	His	Ser
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Ile	Phe	Gly	Asp	Asn	Glu	Ser	Arg	Arg	Gly	Ser	Leu	Phe	Val	Pro	His
			580					585					590		
Arg	Pro	Gln	Glu	Arg	Arg	Ser	Ser	Asn	Ile	Ser	Gln	Ala	Ser	Arg	Ser
		595					600					605			
Pro	Pro	Met	Leu	Pro	Val	Asn	Gly	Lys	Met	His	Ser	Ala	Val	Asp	Cys
	610					615					620				
Asn	Gly	Val	Val	Ser	Leu	Val	Asp	Gly	Arg	Ser	Ala	Leu	Met	Leu	Pro
625					630					635					640
Asn															

Lys Phe Lys Lys Cys Ile Tyr Phe Ile Val Met Asp Pro Phe Val Asp
 725 730 735
 Leu Ala Ile Thr Ile Cys Ile Val Leu Asn Thr Leu Phe Met Ala Met
 740 745 750
 Glu His His Pro Met Thr Glu Glu Phe Lys Asn Val Leu Ala Ile Gly
 755 760 765
 Asn Leu Val Phe Thr Gly Ile Phe Ala Ala Glu Met Val Leu Lys Leu
 770 775 780
 Ile Ala Met Asp Pro Tyr Glu Tyr Phe Gln Val Gly Trp Asn Ile Phe
 785 790 795 800
 Asp Ser Leu Ile Val Thr Leu Ser Leu Val Glu Leu Phe Leu Ala Asp
 805 810 815
 Val Glu Gly Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
 820 825 830
 Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Met Leu Ile Lys Ile Ile
 835 840 845
 Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
 850 855 860
 Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Ser
 865 870 875 880
 Tyr Lys Glu Cys Val Cys Lys Ile Asn Asp Asp Cys Thr Leu Pro Arg
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 Trp His Met Asn Asp Phe Phe His Ser Phe Leu Ile Val Phe Arg Val
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 Leu Cys Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ala
 915 920 925
 Gly Gln Ala Met Cys Leu Ile Val Tyr Met Met Val Met Val Ile Gly
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 Asn Leu Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe
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 Ser Ser Asp Asn Leu Thr Ala Ile Glu Glu Asp Pro Asp Ala Asn Asn
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 Leu Gln Ile Ala Val Thr Arg Ile Lys Lys Gly Ile Asn Tyr Val Lys
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 Gln Thr Leu Arg Glu Phe Ile Leu Lys Ala Phe Ser Lys Lys Pro Lys
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 Phe Leu Lys Glu Lys Asp Lys Ile Ser Gly Phe Gly Ser Ser Val Asp
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 Lys His Leu Met Glu Asp Ser Asp Gly Gln Ser Phe Ile His Asn Pro
 1060 1065 1070
 Ser Leu Thr Val Thr Val Pro Ile Ala Pro Gly Glu Ser Asp Leu Glu
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 Asn Met Asn Ala Glu Glu Leu Ser Ser Asp Ser Asp Ser Glu Tyr Ser
 1090 1095 1100
 Lys Val Arg Leu Asn Arg Ser Ser Ser Ser Glu Cys Ser Thr Val Asp
 1105 1110 1115 1120
 Asn Pro Phe Pro Gly Glu Gly Glu Glu Ala Glu Ala Glu Pro Met Asn
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 Ser Asp Glu Pro Glu Ala Cys Phe Thr Asp Gly Cys Val Arg Arg Phe
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 Ser Cys Cys Gln Val Asn Ile Glu Ser Gly Lys Gly Lys Ile Trp Trp
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Asn Ile Arg Lys Thr Cys Tyr Lys Ile Val Glu His Ser Trp Phe Glu
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 Ser Phe Ile Val Leu Met Ile Leu Leu Ser Ser Gly Ala Leu Ala Phe
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 Glu Asp Ile Tyr Ile Glu Arg Lys Lys Thr Ile Lys Ile Ile Leu Glu
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 Tyr Ala Asp Lys Ile Phe Thr Tyr Ile Phe Ile Leu Glu Met Leu Leu
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 Lys Trp Ile Ala Tyr Gly Tyr Lys Thr Tyr Phe Thr Asn Ala Trp Cys
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 Trp Leu Asp Phe Leu Ile Val Asp Val Ser Leu Val Thr Leu Val Ala
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 Asn Thr Leu Gly Tyr Ser Asp Leu Gly Pro Ile Lys Ser Leu Arg Thr
 1265 1270 1275 1280
 Leu Arg Ala Leu Arg Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met
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 Arg Val Val Val Asn Ala Leu Ile Gly Ala Ile Pro Ser Ile Met Asn
 1300 1305 1310
 Val Leu Leu Val Cys Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly
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 Val Asn Leu Phe Ala Gly Lys Phe Tyr Glu Cys Ile Asn Thr Thr Asp
 1330 1335 1340
 Gly Ser Arg Phe Pro Ala Ser Gln Val Pro Asn Arg Ser Glu Cys Phe
 1345 1350 1355 1360
 Ala Leu Met Asn Val Ser Gln Asn Val Arg Trp Lys Asn Leu Lys Val
 1365 1370 1375
 Asn Phe Asp Asn Val Gly Leu Gly Tyr Leu Ser Leu Leu Gln Val Ala
 1380 1385 1390
 Thr Phe Lys Gly Trp Thr Ile Ile Met Tyr Ala Ala Val Asp Ser Val
 1395 1400 1405
 Asn Val Asp Lys Gln Pro Lys Tyr Glu Tyr Ser Leu Tyr Met Tyr Ile
 1410 1415 1420
 Tyr Phe Val Val Phe Ile Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu
 1425 1430 1435 1440
 Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln Gln Lys Lys Lys Leu
 1445 1450 1455
 Gly Gly Gln Asp Ile Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn
 1460 1465 1470
 Ala Met Lys Lys Leu Gly Ser Lys Lys Pro Gln Lys Pro Ile Pro Arg
 1475 1480 1485
 Pro Gly Asn Lys Ile Gln Gly Cys Ile Phe Asp Leu Val Thr Asn Gln
 1490 1495 1500
 Ala Phe Asp Ile Ser Ile Met Val Leu Ile Cys Leu Asn Met Val Thr
 1505 1510 1515 1520
 Met Met Val Glu Lys Glu Gly Gln Ser Gln His Met Thr Glu Val Leu
 1525 1530 1535
 Tyr Trp Ile Asn Val Val Phe Ile Ile Leu Phe Thr Gly Glu Cys Val
 1540 1545 1550
 Leu Lys Leu Ile Ser Leu Arg His Tyr Tyr Phe Thr Val Gly Trp Asn
 1555 1560 1565
 Ile Phe Asp Phe Val Val Val Ile Ile Ser Ile Val Gly Met Phe Leu
 1570 1575 1580
 Ala Asp Leu Ile Glu Thr Tyr Phe Val Ser Pro Thr Leu Phe Arg Val
 1585 1590 1595 1600
 Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Lys Gly Ala
 1605 1610 1615

Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala
 1620 1625 1630
 Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala
 1635 1640 1645
 Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys Lys Glu Asp Gly Ile
 1650 1655 1660
 Asn Asp Met Phe Asn Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu
 1665 1670 1675 1680
 Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile
 1685 1690 1695
 Leu Asn Ser Lys Pro Pro Asp Cys Asp Pro Lys Lys Val His Pro Gly
 1700 1705 1710
 Ser Ser Val Glu Gly Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Tyr
 1715 1720 1725
 Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr
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 <223> Description of Artificial Sequence:/note =
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 <210> 32
 <211> 5
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:/note =
 synthetic construct

 <400> 32
 Pro Phe Val Tyr Gly
 1 5

 <210> 33
 <211> 5
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:/note =
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 1 5

<210> 34
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
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<400> 34
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1 5

<210> 35
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
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<400> 35
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1 5

<210> 36
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

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1 5

<210> 37
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 37
Asn Pro Phe Pro Gly
1 5

<210> 38
 <211> 1977
 <212> PRT
 <213> Homo Sapien

<400> 38

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Lys	Gln	Ser	Leu	Ala	Leu	Ile	Glu	Gln	Arg	Ile	Ala	Glu	Arg	Lys	Ser
			20					25					30		
Lys	Glu	Pro	Lys	Glu	Glu	Lys	Lys	Asp	Asp	Asp	Glu	Glu	Ala	Pro	Lys
		35					40					45			
Pro	Ser	Ser	Asp	Leu	Glu	Ala	Gly	Lys	Gln	Leu	Pro	Phe	Ile	Tyr	Gly
		50				55					60				
Asp	Ile	Pro	Pro	Gly	Met	Val	Ser	Glu	Pro	Leu	Glu	Asp	Leu	Asp	Pro
65				70						75					80
Tyr	Tyr	Ala	Asp	Lys	Lys	Thr	Phe	Ile	Val	Leu	Asn	Lys	Gly	Lys	Thr
			85						90					95	
Ile	Phe	Arg	Phe	Asn	Ala	Thr	Pro	Ala	Leu	Tyr	Met	Leu	Ser	Pro	Phe
			100					105						110	
Ser	Pro	Leu	Arg	Arg	Ile	Ser	Ile	Lys	Ile	Leu	Val	His	Ser	Leu	Phe
		115					120					125			
Ser	Met	Leu	Ile	Met	Cys	Thr	Ile	Leu	Thr	Asn	Cys	Ile	Phe	Met	Thr
	130					135					140				
Met	Asn	Asn	Pro	Pro	Asp	Trp	Thr	Lys	Asn	Val	Glu	Tyr	Thr	Phe	Thr
145					150					155					160
Gly	Ile	Tyr	Thr	Phe	Glu	Ser	Leu	Val	Lys	Ile	Leu	Ala	Arg	Gly	Phe
				165					170					175	
Cys	Val	Gly	Glu	Phe	Thr	Phe	Leu	Arg	Asp	Pro	Trp	Asn	Trp	Leu	Asp
			180					185					190		
Phe	Val	Val	Ile	Val	Phe	Ala	Tyr	Leu	Thr	Glu	Phe	Val	Asn	Leu	Gly
		195					200					205			
Asn	Val	Ser	Ala	Leu	Arg	Thr	Phe	Arg	Val	Leu	Arg	Ala	Leu	Lys	Thr
	210					215					220				
Ile	Ser	Val	Ile	Pro	Gly	Leu	Lys	Thr	Ile	Val	Gly	Ala	Leu	Ile	Gln
225					230					235					240
Ser	Val	Lys	Lys	Leu	Ser	Asp	Val	Met	Ile	Leu	Thr	Val	Phe	Cys	Leu
			245						250					255	
Ser	Val	Phe	Ala	Leu	Ile	Gly	Leu	Gln	Leu	Phe	Met	Gly	Asn	Leu	Lys
		260						265					270		
His	Lys	Cys	Phe	Arg	Asn	Ser	Leu	Glu	Asn	Asn	Glu	Thr	Leu	Glu	Ser
	275						280						285		
Ile	Met	Asn	Thr	Leu	Glu	Ser	Glu	Glu	Asp	Phe	Arg	Lys	Tyr	Phe	Tyr
	290					295					300				
Tyr	Leu	Glu	Gly	Ser	Lys	Asp	Ala	Leu	Leu	Cys	Gly	Phe	Ser	Thr	Asp
305					310					315					320
Ser	Gly	Gln	Cys	Pro	Glu	Gly	Tyr	Thr	Cys	Val	Lys	Ile	Gly	Arg	Asn
			325						330					335	
Pro	Asp	Tyr	Gly	Tyr	Thr	Ser	Phe	Asp	Thr	Phe	Ser	Trp	Ala	Phe	Leu
			340					345					350		
Ala	Leu	Phe	Arg	Leu	Met	Thr	Gln	Asp	Tyr	Trp	Glu	Asn	Leu	Tyr	Gln
	355						360					365			
Gln	Thr	Leu	Arg	Ala	Ala	Gly	Lys	Thr	Tyr	Met	Ile	Phe	Phe	Val	Val
	370					375					380				
Val	Ile	Phe	Leu	Gly	Ser	Phe	Tyr	Leu	Ile	Asn	Leu	Ile	Leu	Ala	Val

385					390					395				400
Val	Ala	Met	Ala	Tyr	Glu	Glu	Gln	Asn	Gln	Ala	Asn	Ile	Glu	Glu
				405					410					415
Lys	Gln	Lys	Glu	Leu	Glu	Phe	Gln	Gln	Met	Leu	Asp	Arg	Leu	Lys
			420					425					430	
Glu	Gln	Glu	Glu	Ala	Glu	Ala	Ile	Ala	Ala	Ala	Ala	Ala	Glu	Tyr
			435				440					445		Thr
Ser	Ile	Arg	Arg	Ser	Arg	Ile	Met	Gly	Leu	Ser	Glu	Ser	Ser	Glu
	450					455				460				
Thr	Ser	Lys	Leu	Ser	Ser	Lys	Ser	Ala	Lys	Glu	Arg	Arg	Asn	Arg
465					470					475				480
Lys	Lys	Lys	Asn	Gln	Lys	Lys	Leu	Ser	Ser	Gly	Glu	Glu	Lys	Gly
			485						490					495
Ala	Glu	Lys	Leu	Ser	Lys	Ser	Glu	Ser	Glu	Asp	Ser	Ile	Arg	Arg
			500					505					510	Lys
Ser	Phe	His	Leu	Gly	Val	Glu	Gly	His	Arg	Arg	Ala	His	Glu	Lys
	515						520					525		Arg
Leu	Ser	Thr	Pro	Asn	Gln	Ser	Pro	Leu	Ser	Ile	Arg	Gly	Ser	Leu
	530					535				540				Phe
Ser	Ala	Arg	Arg	Ser	Ser	Arg	Thr	Ser	Leu	Phe	Ser	Phe	Lys	Gly
545					550					555				560
Gly	Arg	Asp	Ile	Gly	Ser	Glu	Thr	Glu	Phe	Ala	Asp	Asp	Glu	His
				565					570					575
Ile	Phe	Gly	Asp	Asn	Glu	Ser	Arg	Arg	Gly	Ser	Leu	Phe	Val	Pro
			580					585					590	His
Arg	Pro	Gln	Glu	Arg	Arg	Ser	Ser	Asn	Ile	Ser	Gln	Ala	Ser	Arg
	595						600					605		Ser
Pro	Pro	Met	Leu	Pro	Val	Asn	Gly	Lys	Met	His	Ser	Ala	Val	Asp
	610					615					620			Cys
Asn	Gly	Val	Val	Ser	Leu	Val	Asp	Gly	Arg	Ser	Ala	Leu	Met	Leu
625					630					635				640
Asn	Gly	Gln	Leu	Leu	Pro	Glu	Gly	Thr	Thr	Asn	Gln	Ile	His	Lys
				645					650					655
Arg	Arg	Cys	Ser	Ser	Tyr	Leu	Leu	Ser	Glu	Asp	Met	Leu	Asn	Asp
			660					665					670	Pro
Asn	Leu	Arg	Gln	Arg	Ala	Met	Ser	Arg	Ala	Ser	Ile	Leu	Thr	Asn
	675						680					685		Thr
Val	Glu	Glu	Leu	Glu	Glu	Ser	Arg	Gln	Lys	Cys	Pro	Pro	Trp	Trp
	690					695					700			Tyr
Arg	Phe	Ala	His	Lys	Phe	Leu	Ile	Trp	Asn	Cys	Ser	Pro	Tyr	Trp
705					710				715					720
Lys	Phe	Lys	Lys	Cys	Ile	Tyr	Phe	Ile	Val	Met	Asp	Pro	Phe	Val
				725					730					735
Leu	Ala	Ile	Thr	Ile	Cys	Ile	Val	Leu	Asn	Thr	Leu	Phe	Met	Ala
	740							745					750	Met
Glu	His	His	Pro	Met	Thr	Glu	Glu	Phe	Lys	Asn	Val	Leu	Ala	Ile
	755						760					765		Gly
Asn	Leu	Val	Phe	Thr	Gly	Ile	Phe	Ala	Ala	Glu	Met	Val	Leu	Lys
	770				775						780			Leu
Ile	Ala	Met	Asp	Pro	Tyr	Glu	Tyr	Phe	Gln	Val	Gly	Trp	Asn	Ile
785					790				795					800
Asp	Ser	Leu	Ile	Val	Thr	Leu	Ser	Leu	Val	Glu	Leu	Phe	Leu	Ala
				805					810					815
Val	Glu	Gly	Leu	Ser	Val	Leu	Arg	Ser	Phe	Arg	Leu	Leu	Arg	Val
			820					825					830	Phe
Lys	Leu	Ala	Lys	Ser	Trp	Pro	Thr	Leu	Asn	Met	Leu	Ile	Lys	Ile

835				840				845							
Gly	Asn	Ser	Val	Gly	Ala	Leu	Gly	Asn	Leu	Thr	Leu	Val	Leu	Ala	Ile
850				855				860							
Ile	Val	Phe	Ile	Phe	Ala	Val	Val	Gly	Met	Gln	Leu	Phe	Gly	Lys	Ser
865				870				875				880			
Tyr	Lys	Glu	Cys	Val	Cys	Lys	Ile	Asn	Asp	Asp	Cys	Thr	Leu	Pro	Arg
885				890				895				900			
Trp	His	Met	Asn	Asp	Phe	Phe	His	Ser	Phe	Leu	Ile	Val	Phe	Arg	Val
900				905				910				915			
Leu	Cys	Gly	Glu	Trp	Ile	Glu	Thr	Met	Trp	Asp	Cys	Met	Glu	Val	Ala
915				920				925				930			
Gly	Gln	Ala	Met	Cys	Leu	Ile	Val	Tyr	Met	Met	Val	Met	Val	Ile	Gly
930				935				940				945			
Asn	Leu	Val	Val	Leu	Asn	Leu	Phe	Leu	Ala	Leu	Leu	Ser	Ser	Phe	
945				950				955				960			
Ser	Ser	Asp	Asn	Leu	Thr	Ala	Ile	Glu	Glu	Asp	Pro	Asp	Ala	Asn	Asn
965				970				975				980			
Leu	Gln	Ile	Ala	Val	Thr	Arg	Ile	Lys	Lys	Gly	Ile	Asn	Tyr	Val	Lys
980				985				990				995			
Gln	Thr	Leu	Arg	Glu	Phe	Ile	Leu	Lys	Ala	Phe	Ser	Lys	Lys	Pro	Lys
995				1000				1005				1010			
Ile	Ser	Arg	Glu	Ile	Arg	Gln	Ala	Glu	Asp	Leu	Asn	Thr	Lys	Lys	Glu
1010				1015				1020				1025			
Asn	Tyr	Ile	Ser	Asn	His	Thr	Leu	Ala	Glu	Met	Ser	Lys	Gly	His	Asn
1025				1030				1035				1040			
Phe	Leu	Lys	Glu	Lys	Asp	Lys	Ile	Ser	Gly	Phe	Gly	Ser	Ser	Val	Asp
1045				1050				1055				1060			
Lys	His	Leu	Met	Glu	Asp	Ser	Asp	Gly	Gln	Ser	Phe	Ile	His	Asn	Pro
1060				1065				1070				1075			
Ser	Leu	Thr	Val	Thr	Val	Pro	Ile	Ala	Pro	Gly	Glu	Ser	Asp	Leu	Glu
1075				1080				1085				1090			
Asn	Met	Asn	Ala	Glu	Glu	Leu	Ser	Ser	Asp	Ser	Asp	Ser	Glu	Tyr	Ser
1090				1095				1100				1105			
Lys	Val	Arg	Leu	Asn	Arg	Ser	Ser	Ser	Ser	Glu	Cys	Ser	Thr	Val	Asp
1105				1110				1115				1120			
Asn	Pro	Leu	Pro	Gly	Glu	Gly	Glu	Glu	Ala	Glu	Ala	Glu	Pro	Met	Asn
1125				1130				1135				1140			
Ser	Asp	Glu	Pro	Glu	Ala	Cys	Phe	Thr	Asp	Gly	Cys	Val	Arg	Arg	Phe
1140				1145				1150				1155			
Ser	Cys	Cys	Gln	Val	Asn	Ile	Glu	Ser	Gly	Lys	Gly	Lys	Ile	Trp	Trp
1155				1160				1165				1170			
Asn	Ile	Arg	Lys	Thr	Cys	Tyr	Lys	Ile	Val	Glu	His	Ser	Trp	Phe	Glu
1170				1175				1180				1185			
Ser	Phe	Ile	Val	Leu	Met	Ile	Leu	Leu	Ser	Ser	Gly	Ala	Leu	Ala	Phe
1185				1190				1195				1200			
Glu	Asp	Ile	Tyr	Ile	Glu	Arg	Lys	Lys	Thr	Ile	Lys	Ile	Ile	Leu	Glu
1205				1210				1215				1220			
Tyr	Ala	Asp	Lys	Ile	Phe	Thr	Tyr	Ile	Phe	Ile	Leu	Glu	Met	Leu	Leu
1220				1225				1230				1235			
Lys	Trp	Ile	Ala	Tyr	Gly	Tyr	Lys	Thr	Tyr	Phe	Thr	Asn	Ala	Trp	Cys
1235				1240				1245				1250			
Trp	Leu	Asp	Phe	Leu	Ile	Val	Asp	Val	Ser	Leu	Val	Thr	Leu	Val	Ala
1250				1255				1260				1265			
Asn	Thr	Leu	Gly	Tyr	Ser	Asp	Leu	Gly	Pro	Ile	Lys	Ser	Leu	Arg	Thr
1265				1270				1275				1280			
Leu	Arg	Ala	Leu	Arg	Pro	Leu	Arg	Ala	Leu	Ser	Arg	Phe	Glu	Gly	Met

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Arg	Val	Val	Val	Asn	Ala	Leu	Ile	Gly	Ala	Ile	Pro	Ser	Ile	Met	Asn			
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Val	Leu	Leu	Val	Cys	Leu	Ile	Phe	Trp	Leu	Ile	Phe	Ser	Ile	Met	Gly			
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Val	Asn	Leu	Phe	Ala	Gly	Lys	Phe	Tyr	Glu	Cys	Ile	Asn	Thr	Thr	Asp			
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Gly	Ser	Arg	Phe	Pro	Ala	Ser	Gln	Val	Pro	Asn	Arg	Ser	Glu	Cys	Phe			
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Ala	Leu	Met	Asn	Val	Ser	Gln	Asn	Val	Arg	Trp	Lys	Asn	Leu	Lys	Val			
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Asn	Phe	Asp	Asn	Val	Gly	Leu	Gly	Tyr	Leu	Ser	Leu	Leu	Gln	Val	Ala			
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Thr	Phe	Lys	Gly	Trp	Thr	Ile	Ile	Met	Tyr	Ala	Ala	Val	Asp	Ser	Val			
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Asn	Val	Asp	Lys	Gln	Pro	Lys	Tyr	Glu	Tyr	Ser	Leu	Tyr	Met	Tyr	Ile			
										1410			1415			1420		
Tyr	Phe	Val	Val	Phe	Ile	Ile	Phe	Gly	Ser	Phe	Phe	Thr	Leu	Asn	Leu			
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Phe	Ile	Gly	Val	Ile	Ile	Asp	Asn	Phe	Asn	Gln	Gln	Lys	Lys	Lys	Leu			
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Gly	Gly	Gln	Asp	Ile	Phe	Met	Thr	Glu	Glu	Gln	Lys	Lys	Tyr	Tyr	Asn			
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Ala	Met	Lys	Lys	Leu	Gly	Ser	Lys	Lys	Pro	Gln	Lys	Pro	Ile	Pro	Arg			
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Pro	Gly	Asn	Lys	Ile	Gln	Gly	Cys	Ile	Phe	Asp	Leu	Val	Thr	Asn	Gln			
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Ala	Phe	Asp	Ile	Ser	Ile	Met	Val	Leu	Ile	Cys	Leu	Asn	Met	Val	Thr			
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Met	Met	Val	Glu	Lys	Glu	Gly	Gln	Ser	Gln	His	Met	Thr	Glu	Val	Leu			
										1525			1530			1535		
Tyr	Trp	Ile	Asn	Val	Val	Phe	Ile	Ile	Leu	Phe	Thr	Gly	Glu	Cys	Val			
										1540			1545			1550		
Leu	Lys	Leu	Ile	Ser	Leu	Arg	His	Tyr	Tyr	Phe	Thr	Val	Gly	Trp	Asn			
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Ile	Phe	Asp	Phe	Val	Val	Val	Ile	Ile	Ser	Ile	Val	Gly	Met	Phe	Leu			
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Ala	Asp	Leu	Ile	Glu	Thr	Tyr	Phe	Val	Ser	Pro	Thr	Leu	Phe	Arg	Val			
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Ile	Arg	Leu	Ala	Arg	Ile	Gly	Arg	Ile	Leu	Arg	Leu	Val	Lys	Gly	Ala			
										1605			1610			1615		
Lys	Gly	Ile	Arg	Thr	Leu	Leu	Phe	Ala	Leu	Met	Met	Ser	Leu	Pro	Ala			
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Leu	Phe	Asn	Ile	Gly	Leu	Leu	Leu	Phe	Leu	Val	Met	Phe	Ile	Tyr	Ala			
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Ile	Phe	Gly	Met	Ser	Asn	Phe	Ala	Tyr	Val	Lys	Lys	Glu	Asp	Gly	Ile			
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Asn	Asp	Met	Phe	Asn	Phe	Glu	Thr	Phe	Gly	Asn	Ser	Met	Ile	Cys	Leu			
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Phe	Gln	Ile	Thr	Thr	Ser	Ala	Gly	Trp	Asp	Gly	Leu	Leu	Ala	Pro	Ile			
										1685			1690			1695		
Leu	Asn	Ser	Lys	Pro	Pro													

1730	1735	1740
Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Thr		
1745	1750	1755
Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu		1760
	1765	1770
Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu Phe Ser Lys Leu Ser		1775
	1780	1785
Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn		1790
	1795	1800
Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg		1805
	1810	1815
Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly		1820
1825	1830	1835
Glu Ser Gly Glu Met Asp Ser Leu Arg Ser Gln Met Glu Glu Arg Phe		1840
	1845	1850
Met Ser Ala Asn Pro Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr		1855
	1860	1865
Leu Lys Arg Lys Gln Glu Asp Val Ser Ala Thr Val Ile Gln Arg Ala		1870
	1875	1880
Tyr Arg Arg Tyr Arg Leu Arg Gln Asn Val Lys Asn Ile Ser Ser Ile		1885
	1890	1895
Tyr Ile Lys Asp Gly Asp Arg Asp Asp Asp Leu Leu Asn Lys Lys Asp		1900
1905	1910	1915
Met Ala Phe Asp Asn Val Asn Glu Asn Ser Ser Pro Glu Lys Thr Asp		1920
	1925	1930
Ala Thr Ser Ser Thr Thr Ser Pro Pro Ser Tyr Asp Ser Val Thr Lys		1935
	1940	1945
Pro Asp Lys Glu Lys Tyr Glu Gln Asp Arg Thr Glu Lys Glu Asp Lys		1950
	1955	1960
Gly Lys Asp Ser Lys Glu Ser Lys Lys		1965
1970	1975	